



Faculty of Computer Science and Information Technology

**BOOKHUB: COMMUNITY-BASED BOOK TRADING MOBILE
APPLICATION**

Abang Amirul Syammel Bin Abang Mohamad Ismail

**Bachelor of Computer Science with Honours
(Computational Science)
2019**

**BOOKHUB : COMMUNITY-BASED BOOK TRADING MOBILE
APPLICATION**

ABANG AMIRUL SYAMMEL BIN ABANG MOHAMAD ISMAIL

A thesis submitted

**In fulfillment of the requirements for the degree of Bachelor of Computer Science with
Honours
(Computational Science)**

Faculty of Computer Science and Information Technology

UNIVERSITY MALAYSIA SARAWAK

2019

UNIVERSITI MALAYSIA SARAWAK

THESIS STATUS ENDORSEMENT FORM

TITLE BOOKHUB: COMMUNITY-BASED BOOK TRADING
MOBILE APPLICATION

ACADEMIC SESSION: 18/19

(CAPITAL LETTERS)

hereby agree that this Thesis* shall be kept at the Centre for Academic Information Services, Universiti Malaysia Sarawak, subject to the following terms and conditions:

1. The Thesis is solely owned by Universiti Malaysia Sarawak
2. The Centre for Academic Information Services is given full rights to produce copies for educational purposes only
3. The Centre for Academic Information Services is given full rights to do digitization in order to develop local content database
4. The Centre for Academic Information Services is given full rights to produce copies of this Thesis as part of its exchange item program between Higher Learning Institutions [or for the purpose of interlibrary loan between HLI]
5. ** Please tick (✓)

☐

CONFIDENTIAL

(Contains classified information bounded by the OFFICIAL SECRETS ACT 1972)

☐

RESTRICTED

(Contains restricted information as dictated by the body or organization where the research was conducted)

☒

UNRESTRICTED

Validated by



(AUTHOR'S SIGNATURE)



(SUPERVISOR'S SIGNATURE)

Permanent Address

Lot 2404 Jln Tan Sri Abang
1Khwan Semariang Petra
Jaya 93050 Kuching Sarawak

Dr. MOHAMAD NAZIM B JAMBLI
Senior Lecturer
Faculty of Computer Science and Information Technology
Universiti Malaysia Sarawak

Date: 17/5/2019

Date: 17/5/2019

Note * Thesis refers to PhD, Master, and Bachelor Degree

** For Confidential or Restricted materials, please attach relevant documents from relevant organizations / authorities

DECLARATION OF ORIGINALITY

I hereby declare that this research together with all of its content is none other than that of my own work, with consideration of the exception of research based information and relative materials that were adapted and extracted from other resources, which have evidently been quoted or stated respectively.

Signed,



Abang Amirul Syammel Bin Abang Mohamad Ismail

Faculty of Computer Science and Information Technology

Universiti Malaysia Sarawak.

29 MAY 2019

ACKNOWLEDGEMENTS

I would never finish my Final Year Project without any support and encouragement from these people around me that I thankful.

First and foremost, I want to thank my supervisor Dr. Mohamad Nazim Jambli with full of my heart because he always gives me a guidelines and knowledge on what to do in this writing project. Without his involvement in this project I don't know weather I can finish my writing on time. I would to say thank you very much once again for understanding and patience during the process to make my final year project done. I also want to say thank you to my fellow housemates of Unigarden 7B and my friends that are willing to help me during this project.

Lastly, most importantly I would like to say thank you to both of my parents, Mr. Abg Mohd Ismail and Mrs.Dyg Hayati because always give the best advised for me to not give up and always there when I need them. Not forget to my family member in partial compensation for taking so much of my time away from them. Also thank you for everyone that ever helped me that I not mentioned here. Thank you.

ABSTRACT

Trading and exchanging book activities have practiced for ages even before the advancement of technologies. But, these activities can be practiced easily with the help of modern technologies. However, two-ways of communication is needed in order to trade and exchange. Therefore, BookHub Systems is proposed for society to connect each other with book trading that involve as book exchange, book advertise and sharing their review or comment about the books. Though, Bookhub is only place for marketplace, the user of BookHub need to communicate each other outside of the application. In addition, society also can share upcoming book event information around their location through this application.

ABSTRAK

Dagangan dan pertukaran aktiviti buku telah diamalkan selama beberapa tahun sebelum kemajuan teknologi. Tetapi, aktiviti-aktiviti ini dapat diamalkan dengan mudah dengan bantuan teknologi moden. Walau bagaimanapun, dua cara komunikasi diperlukan untuk berdagang dan bertukar. Oleh itu, Sistem BookHub dicadangkan agar masyarakat saling berhubung dengan perdagangan buku yang melibatkan pertukaran buku, mengiklankan buku dan berkongsi ulasan atau ulasan mereka mengenai buku tersebut. Walaupun bagaimanapun, Bookhub hanya tempat untuk pasaran, pengguna BookHub perlu berkomunikasi satu sama lain di luar aplikasi ini. Di samping itu, masyarakat juga boleh berkongsi maklumat acara buku yang akan datang di sekitar lokasi mereka melalui aplikasi ini.

TABLE OF CONTENTS

| | |
|---|--------------|
| Acknowledgements | i |
| Abstract | ii |
| Abstrak | iii |
| Table of Contents | iv |
| List of Figures | viii |
| List of Tables | xi |
| CHAPTER 1: INTRODUCTION | 1 |
| 1.1 Project Title | 1 |
| 1.2 Introduction | 1 |
| 1.3 Problem Statement | 2 |
| 1.4 Objectives | 2 |
| 1.5 Scope | 3 |
| 1.6 Methodology | 3 |
| 1.7 Significance of Project | 4 |
| 1.8 Project Schedule | 4 |
| 1.9 Expected Outcome | 5 |
| CHAPTER 2: LITERATURE REVIEW | 6 |
| 2.1 Introduction | 6 |

| | | |
|-------------------------------|--------------------------------------|-----------|
| 2.2 | Review on Similar Existing Systems | 6 |
| 2.2.1 | Swappybooks | 6 |
| 2.2.2 | Booku | 8 |
| 2.2.3 | Bookscouter | 10 |
| 2.2.4 | One for one | 12 |
| 2.2.5 | BookMooch | 14 |
| 2.2.6 | Table for comparison between systems | 18 |
| 2.3 | Review of Tools and Technology | 19 |
| 2.3.1 | Framework | 19 |
| 2.3.2 | Database | 20 |
| 2.4 | Summary | 20 |
| CHAPTER 3: METHODOLOGY | | 21 |
| 3.1 | Introduction | 21 |
| 3.2 | System Development Methodology | 21 |
| 3.2.1 | Analyse and Quick Design | 22 |
| 3.2.1.1 | Analysis Phase | 22 |
| 3.2.1.2 | Design Phase | 23 |
| 3.2.1.2.1 | Use Case Diagram | 23 |
| 3.2.1.2.2 | Sequence Diagram | 24 |
| 3.2.1.2.3 | Entity Relationship Diagram | 28 |
| 3.2.1.2.4 | Data Dictionary | 29 |
| 3.2.1.2.5 | User Interface Design | 31 |

| | | |
|-------------------|---|-----------|
| 3.2.2 | Prototyping Cycle Phase | 36 |
| 3.2.3 | Testing Phase | 37 |
| 3.2.4 | Implementation Phase | 38 |
| 3.3 | Summary | 38 |
| CHAPTER 4: | IMPLEMENTATION | 39 |
| 4.1 | Introduction | 39 |
| 4.2 | Software Installation and Configuration | 39 |
| 4.2.1 | Node | 39 |
| 4.2.2 | Ionic Framework | 40 |
| 4.3 | Introduction of User Roles for BookHub | 41 |
| 4.3.1 | Users | 42 |
| 4.3.1.1 | View all posted books and events | 42 |
| 4.3.1.2 | View the details of the book | 44 |
| 4.3.1.3 | Post new book and share new event | 45 |
| 4.3.1.4 | View user profile and report other user | 46 |
| 4.3.1.5 | View requesting, requested and wish list of books | 46 |
| 4.3.1.6 | Managing profile | 48 |
| 4.3.2 | System Admin | 50 |
| 4.3.2.1 | View and delete registered user | 50 |
| 4.3.2.2 | View and update reported user | 50 |
| 4.4 | Summary | 51 |

| | |
|---|-----------|
| CHAPTER 5: TESTING | 52 |
| 5.1 Introduction | 52 |
| 5.2 Functional Testing | 52 |
| 5.3 Non-functional testing | 56 |
| 5.3.1 Usability testing | 57 |
| 5.3.2 Portability testing | 58 |
| 5.4 Summary | 59 |
| CHAPTER 6: CONCLUSION AND FUTURE WORKS | 60 |
| 6.1 Introduction | 60 |
| 6.2 Objective Achievement | 60 |
| 6.3 Project Limitation | 61 |
| 6.4 Future Work | 61 |
| 6.5 Conclusion | 61 |
| REFERENCES | 62 |
| APPENDICES | |
| A Project Schedule | 65 |
| B Questionnaires | 66 |
| C Usability Testing Feedback Form | 68 |

LIST OF FIGURES

| | | |
|-------------|--|----|
| Figure 1.1 | Rapid Application Development(Ghahrai, 2018) | 3 |
| Figure 2.1 | Swappybooks Browse Page | 7 |
| Figure 2.2 | Swappybooks Add New Book Page | 8 |
| Figure 2.3 | Booku Browse Page | 9 |
| Figure 2.4 | Booku Add New Book Page | 10 |
| Figure 2.5 | Bookscouter Vendor List Page | 11 |
| Figure 2.6 | Bookscouter Pro Account Details Explanation Page | 12 |
| Figure 2.7 | One for one Registration Page | 13 |
| Figure 2.8 | One for one Profile Page | 14 |
| Figure 2.9 | BookMooch Registration Page | 15 |
| Figure 2.10 | BookMooch Browse Page | 16 |
| Figure 2.11 | BookMooch Book Details Page | 17 |
| Figure 3.1 | Rapid Application Development (Ghahrai, 2018) | 22 |
| Figure 3.2 | Result of Responses for Selected Question (1) | 23 |
| Figure 3.3 | Result of Responses for Selected Question (2) | 23 |
| Figure 3.4 | Use Case Diagram | 24 |
| Figure 3.5 | Sequence Diagram for Register User Functions | 25 |
| Figure 3.6 | Sequence Diagram for General BookHub Functions | 25 |
| Figure 3.7 | Sequence Diagram for Request Book Functions | 26 |
| Figure 3.8 | Sequence Diagram for Event Functions | 26 |

| | | |
|-------------|---|----|
| Figure 3.9 | Sequence Diagram for Manage Profile Functions | 26 |
| Figure 3.10 | Sequence Diagram for Report User Functions | 27 |
| Figure 3.11 | Sequence Diagram for Admin Functions | 27 |
| Figure 3.12 | Entity Relationship Diagram of BookHub | 28 |
| Figure 3.13 | Home Page | 32 |
| Figure 3.14 | Login Page | 32 |
| Figure 3.15 | Register Email Page | 33 |
| Figure 3.16 | Register User Page | 33 |
| Figure 3.17 | Add New Book Page | 34 |
| Figure 3.18 | Event List Page | 34 |
| Figure 3.19 | Promote Event Page | 35 |
| Figure 3.20 | Wishlist Page | 35 |
| Figure 3.21 | Request List Page | 36 |
| Figure 4.1 | Landing and Login Page | 42 |
| Figure 4.2 | Browse Book and Event Page | 43 |
| Figure 4.3 | Option menu to delete book | 43 |
| Figure 4.4 | Book Details Page | 44 |
| Figure 4.5 | Post New Book and Share New Event Page | 45 |
| Figure 4.6 | View Other's User Profile Page | 46 |
| Figure 4.7 | Requesting list Page | 47 |
| Figure 4.8 | Requested list Page | 47 |
| Figure 4.9 | Wish List Page | 48 |
| Figure 4.10 | Option menu when button is clicked | 48 |

| | |
|--|----|
| Figure 4.11 Managing profile menu Page | 49 |
| Figure 4.12 Managing Profile and Address Page | 49 |
| Figure 4.13 View User List Page | 50 |
| Figure 4.14 View Reported User List Page | 51 |
| Figure 5.1 Graph of Feedback on System Functionality Ease of Use | 57 |
| Figure 5.2 Graph of Feedback on System Design | 57 |
| Figure A.1 Project Schedule Table | 65 |
| Figure A.2 Project Schedule Gantt Chart | 65 |

LIST OF TABLES

| | | |
|-----------|---|----|
| Table 2.1 | Comparison of features between existing systems and proposed system | 18 |
| Table 3.1 | User Table | 29 |
| Table 3.2 | Event Table | 29 |
| Table 3.3 | Report Table | 30 |
| Table 3.4 | Request Table | 30 |
| Table 3.5 | Genre Table | 30 |
| Table 3.6 | Wish List Table | 30 |
| Table 3.7 | Review Table | 31 |
| Table 3.8 | Book Table | 31 |
| Table 5.1 | User Test Case 1 | 53 |
| Table 5.2 | User Test Case 2 | 53 |
| Table 5.3 | User Test Case 3 | 54 |
| Table 5.4 | User Test Case 4 | 54 |
| Table 5.5 | User Test Case 5 | 55 |
| Table 5.6 | User Test Case 6 | 55 |
| Table 5.7 | User Test Case 7 | 56 |
| Table 5.8 | Test case for Android firmware adaptive | 58 |
| Table 5.9 | Test case for IOS firmware adaptive | 58 |
| Table 6.1 | Objective and achievement in system development | 60 |

CHAPTER 1

INTRODUCTION

1.1 Project Title

BookHub : Community-based book trading mobile application

1.2 Introduction

BookHub is a social media application that will act as a platform for society to connect with each other for book trading. Through this application, the society can exchange their used book with others without any fees and before they exchange the books both sides need to agree on what they offered. Moreover, this application can be a platform for them to advertise for trading.

The advertise can be any books and it doesn't matter what kind of book. In detail, the selling process not involved in this application it only advertises their books if they want to sell it they will make the deal and all the process on them because BookHub only responsible for advertising their book. The society also can share their review books on the application. For instance, after the exchange book is complete done, they can review or comment about the storyline of the book either it is interesting or vice-versa. In other words, they review will encourage each other to read a book with a different genre like horror, fantasy and action.

Besides, the society can share information with others about upcoming event around their location. Thus, BookHub is convenient to society to explore the book world.

1.3 Problem Statement

The reason for this proposed system is there is no one platform that is able to cater for buying, selling, renting and exchanging of books. Previously, users would need to publish their book to multiple platforms (i.e. one book for sale need to publish in platform A and one book for exchange need to publish in platform B). By utilizing along these process, users have to be updated for any request from multiple platforms.

Besides, there is no specific system that related to books event or programs that inform people about it. The current way that we can see how the organizer spread the information about the books event or programs only via social media such as Facebook, WhatsApp and others. Their idea is interesting but it is too common because people may forget about the date, place and time so it is really not functional.

1.4 Objectives

The main objective of this project is to design and develop an application that act as platform for book trading.

Other objective included:

1. To identify software requirement to develop BookHub mobile application.
2. To design and develop BookHub mobile application.
3. To verify functionality BookHub mobile application.

1.5 Scope

The targeted user for this proposed system is public society for book trading. This application is two-way communication where certain user need to publish books for trading transaction done. Moreover, this proposed system is developed to both web and mobile applications.

1.6 Methodology

For this project, the methodology that will be used is Rapid Application Development (RAD). RAD is chosen because it is more focus on development than planning and in result, take a shorter time in development.

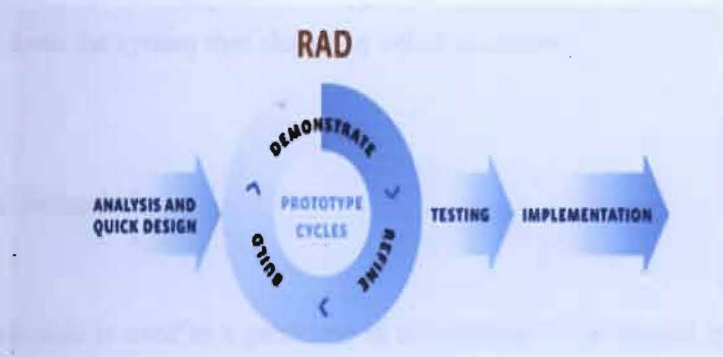


Figure 1.1: Rapid Application Development(Ghahrai, 2018)

Based on figure above, RAD consist of four main phase which are analysis and quick design phase, prototype cycle phase, testing phase and implementation phase. First phase, analysis and quick design, is the phase where identify or figuring out the requirements of the project and leads to the prototype phase. In the prototype phase, the designed prototype is build and demonstrated to refine the requirement and this phase is repeated until the

requirement meets. The next phase, the system is tested to make sure that it works well in the way it's supposed to be. Then, the system is ready to be implemented.

1.7 Significance of Project

This proposed project aims to make the book trading and exchange activities easier which society able to implement both activities in one single platform. Through the system, society can request the book that wish to trade, rent and exchange. The requested book user will receive notification and they can perform the trading or exchange activities in a short time. They also can share the review of the books to enhance others to trade or exchange. In addition, the society can make a wish list of the books they desired in this proposed system. This project also able to be attracting societies to join books event as they got the information about the event from the system that shared by other societies.

1.8 Project Schedule

Project schedule is used as a guideline in developing the proposed system, BookHub. Gantt chart shown in Figure A.2 in Appendix A is developed based on the task and date from table shown in Table A.1 in Appendix A by using Microsoft Project.

1.9 Expected Outcome

The expected outcome for this project is a mobile application that serves as a society platform for books trading. Society can publish their used books for trading, renting and swapping.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, a literature review of similar features of the existing system with the proposed system will be discussed. A literature review is an assessment to provide a summary and comparison of a system. The five existing systems that are chosen for this literature review are Booku, Oneforone, Bookscouter, BookMooch, and SwappyBooks. All of these systems are book trading systems. Analysis of those systems will be carried out to inspect the features, strength, and weakness so that the strength can be implemented into the proposed system and improvised the weakness of the existing system.

2.2 Review on Similar Existing Systems

2.2.1 Swappybooks

Swappybooks is an application for book swapping that was created by Pablo Paciello. This application was released on March 2017. Swappybooks is a simple and free application, and user registration is not required. The user just needs to browse other nearby people books who want to exchange. Once the user interested in the book, the user just need like the book

and coordinate where the swap transaction will take place. However, there is some limitation found on this system. This system only available for iOS application and does not available for web-based while android application will be available soon. *

Moreover, in order to add books for exchange, scan for ISBN number is the only method provided. As a result, it will be a limitation for the user who wants to post rare or old books due to these books have no ISBN number or new books with an unclear ISBN number. Manually adding method can prevent this limitation occur.

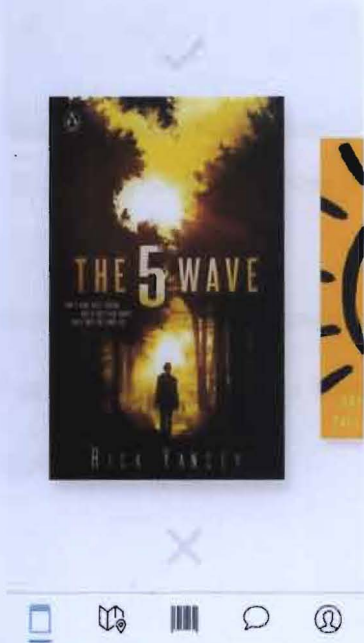


Figure 2.1: Swappybooks Browse Page

Figure above is Swappybooks home page. There are two symbols, checkmark which represents like and cross mark which represents dislike. If the user interested with the book, the user just need to swap up through the check mark and vice versa. This liked and disliked books will be shown on the profile page.



Figure 2.2: Swappybooks Add New Book Page

Figure above represents Swappybooks add book page. The user needs to scan ISBN number that is mostly located at the back cover of a book. After user scans the book, confirmation to post the book appeared.

2.2.2 Booku

Booku is a web-based system designed for book trading platform. Booku was created by Sivanathan Subramaniam with his 4 co-founders in 2016 (Thian, 2017). By this system, a registered user can sell, rent and buy used books. In addition, they also can give review or comment on the books posted by others. Meanwhile, an unregistered user only can view content within this page. The user can register with this system by using their Gmail or Facebook. Other than that, this system also easy to use because the design of this system is clean and user-friendly.

However, there is some limitation found on the Booku platform. This book trading platform is only for sale, rent and buys books. If some people want to make an exchange with sell and rent book transaction, as a result, they need to do it with different platforms. Besides, in this era, people are more to a phone than a desktop, while this system is an only web-based system, which does not provide a mobile application. Moreover, in order to post books for trading within this system, approval from admin is required. This process may avoid a scam or to validate the book, but this means that it needs to take more times and process to post books.

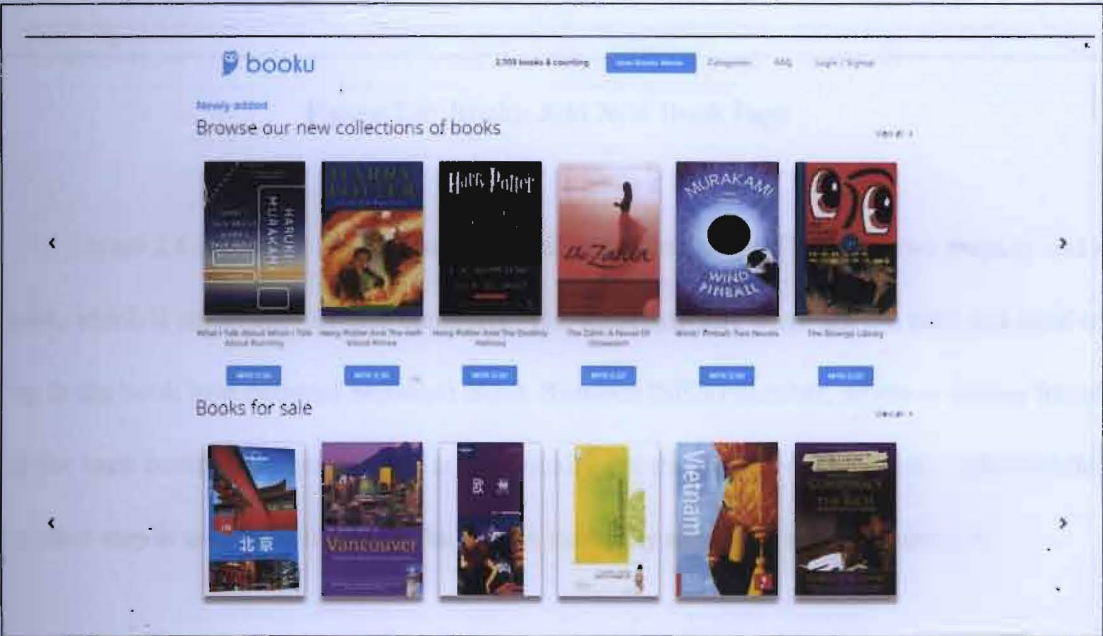


Figure 2.3: Booku Browse Page

Figure 2.3 shows the Booku browse page. It is a simple design where the books are separated into different categories. The book's title can be viewed clearly without ellipsis and the prices are placed inside a button. There is two color of the button to specified the trading, which blue is for rent and green is for buy. When the button is clicked, the user will be redirected to the books details page as shown in figure above